CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.14/KRIDL/CEMENT/2014-15 Date: 04.08.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
SAMPLE ID	:	Cement
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4)	31.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5)	155 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	490 Minutes	Not More than 600 Minutes
3	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	1 mm	Not more than 10 mm

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Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/W.No.14/KRIDL/SAND/2014-15 : 04.08.2014

TEST REPORT ON FINE AGGREGATES (SAND)
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014

Date of Testing : 04.08.2014

Material : Sand

Total Wt. of Aggregates in gms **2000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	89	4.45	4.45	95.6	90-100
2.36	162	8.10	12.55	87.5	75-100
1.18	485	24.25	36.80	63.2	55-90
600 Micron	430	21.50	58.30	41.7	35-59
300 Micron	482	24.10	82.40	17.6	8-30
150 Micron	253	12.65	95.05	5.0	0-10

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Job No.: CTCE/BBMP/W.No.14/KRIDL/AGG/2014-15 : 04.08.2014

TEST REPORT ON COARSE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014

Date of Testing : 04.08.2014

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **25000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	990	3.96	3.96	96.04	95-100
20	15026	60.10	64.06	35.94	30-70
10	5314	21.26	85.32	14.68	10-35
4.75	2685	10.74	96.06	3.94	0-5

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CC Blocks/2014-15 07.08.2014

TEST REPORT ON CEMENT CONCRETE BLOCKS

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of the Work : Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Refernce : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014

Size of Block : 400 mm x 200 mm x 200 mm

Cross Sectional Area : 80000 mm^2

Technical Reference : IS: 2185 (Part 1) - 2005

No. of Blocks Tested : 03

Sl.No.	Date of Sampling	Date of testing	Failure load (KN)	Compressive strength	Minimum Compressive Strength of Individual Units
			kN	N/mm^2	N/mm^2
1	05.08.2014	07.08.2014	261.3	3.27	3.2
2	05.08.2014	07.08.2014	262.4	3.28	
3	05.08.2014	07.08.2014	263.3	3.29	

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Job No.: CTCE/BBMP/W.No.14/KRIDL/STEEL/2014-15 20.08.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager(West),** KRIDL, Bangalore..
Name of the work	:	Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
Date of Test	:	20.08.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	10	0.62	513	556	13.10	O.K	O.K

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Job No.: CTCE/BBMP/W.No.14/KRIDL/STEEL/2014-15 20.08.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager(West)**, KRIDL, Bangalore..
Name of the work	:	Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
Date of Test	:	20.08.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	16	1.58	520	558	13.35	O.K	O.K

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CUBE/2014-15

25.09.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of the work	: Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
Sample ID	: Culvert Deck Slab Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{15}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	28.08.2014	25.09.2014	8.146	351.3	15.61
2	28.08.2014	25.09.2014	8.295	359.6	15.98
3	28.08.2014	25.09.2014	8.328	365.4	16.24

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Job No.: CTCE/BBMP/W.No.14/KRIDL/CUBE/2014-15

22.09.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of the work	: Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
Sample ID	: Coping Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{15}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	25.08.2014	22.09.2014	8.277	362.3	16.10
2	25.08.2014	22.09.2014	8.456	382.5	17.00
3	25.08.2014	22.09.2014	8.321	378.9	16.84

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Job No.: CTCE/BBMP/W.No.14/KRIDL/GSB-1/GR/2014-15 Date : 08.09.2014

GRADATION FOR GSB-I (CLOSE GRADED)
IS: 2720 (Part 4)

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of work : Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014

Date of Testing : 08.09.2014

Sample Source : GSB Mix Plant Bangalore. **Oven Dry Wt (gm) :** 25100

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	0	100
53.0	1110	1110	4.42	95.58	80-100
26.50	6530	7640	30.44	69.56	55-90
9.50	3565	11205	44.64	55.36	35-65
4.75	3520	14725	58.67	41.33	25-55
2.36	2010	16735	66.67	33.33	20-40
0.425	4550	21285	84.80	15.20	10-25
0.075	2750	24035	95.76	4.24	3-10
PAN	1065				
Total	25100				

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/W.No.14/KRIDL/GSB-1/AL/2014-15 Date : 08.09.2014

ATTERBERG LIMITS TEST FOR GSB (CLOSE GRADED)
IS : 2720 (Part - 5)

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of work : Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014

Date of Testing : 08.09.2014

As per MORTH Table : 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.50	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.14/KRIDL/WMM/Gradation/2014-15

15.09.2014

GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014

Date of Testing : 15.09.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **26000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	955	955	3.7	96.3	95-100
22.4	5485	6440	24.8	75.2	60-80
11.2	5620	12060	46.4	53.6	40-60
4.75	4135	16195	62.3	37.7	25-40
2.36	3855	20050	77.1	22.9	15-30
0.600	3050	23100	88.8	11.2	8-22
0.075	2515	25615	98.5	1.5	0-8

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15.09.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	15.09.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines	22.08	22.28	
	100* (W_2/W_1)%			22.08

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	15.09.2014

Result : Flakiness Index = **12.36%**

Elongation Index = **13.85%**

Result : Combined Flakiness & Elongation index **26.21%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.14/KRIDL/WMM/AL/2014-15 15.09.2014

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Worl: Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014

Date of Testing : 15.09.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	24.00	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
SAMPLE I/D	Roads in Siddeshwara Layout Ward No.14, BBMP, Bangalore.
DATE OF TESTING	25.09.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	26.00
7. Bitumen content in %	5.00	5.20
8. Average	**5.10**	

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GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements & Asphalting cross roads and Re-Construction of drains in Siddeshwara Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 30.07.2014
SAMPLE I/D	Roads in Siddeshwara Layout Ward No.14, BBMP, Bangalore.
DATE OF TESTING	25.09.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	36.32	7.65	7.65	92.35	90-100
4.75	261.5	55.05	62.70	37.30	35-51
2.36	50.23	10.57	73.27	26.73	24-39
1.18	33.25	7.00	80.27	19.73	15-30
0.3	38.56	8.12	88.39	11.61	9-19
0.075	29.33	6.17	94.57	5.43	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	35.62	7.51	7.51	92.49	90-100
4.75	263.4	55.57	63.08	36.92	35-51
2.36	48.56	10.24	73.33	26.67	24-39
1.18	36.56	7.71	81.04	18.96	15-30
0.3	38.52	8.13	89.17	10.83	9-19
0.075	30.25	6.38	95.55	4.45	3-8

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